

CLAIMS

What is claimed is:

1. An apparatus for air filtration comprising:

a. a pleated filter media comprising a pleated first edge and a pleated second edge;

5 b. an expandable mesh portioned on one side of the pleated filter media, wherein the expandable mesh is bonded to the pleated filter media;

c. an outer frame comprising an outer front panel, an outer back panel, an outer top side, an outer bottom side, an outer first side, and an outer second side, wherein the outer front panel and outer back panel are connected at the outer top side the outer bottom side, and the outer side;

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d. an inner frame comprising an inner front panel, an inner back panel, an inner top side, an inner bottom side, an inner first side, and an inner second side, wherein the inner front panel and inner back panel are connected at the inner top side the inner bottom side, and the inner side;

15 e. at least two outer front supports members in the outer front panel creating an outer front panel opening;

f. at least two outer back supports members in the outer back panel creating an outer back panel opening;

20 g. at least two inner front supports members in the inner front panel creating an inner front panel opening;

h. at least two inner back supports members in the inner back panel creating an inner back panel opening;

i. wherein the inner frame slides into the outer frame between the outer front panel

and outer back panel; and

j. wherein the pleated filter media is disposed inside the outer frame and the inner frame and the pleated first edge is attached the outer first side and the pleated second edge is attached to the inner first side.

- 5 2. The apparatus of claim 1, wherein the pleated filter media comprises between 4 pleats per foot and 30 pleats per foot.
3. The apparatus of claim 1, wherein the pleated filter media is an electrostatic filter media that is made of synthetic or cotton blend.
4. The apparatus of claim 1, wherein the pleated filter media is a heat treated media.
- 10 5. The apparatus of claim 1, wherein the outer frame and the inner frame comprise a shape selected from the group consisting of rectangle, square, and circle.
6. The apparatus of claim 1, further comprising a locking component disposed on the outer frame to prevent movement of the inner frame while supporting the filter media.
7. The apparatus of claim 1, wherein the locking component is tape.
- 15 8. The apparatus of claim 7, wherein the locking component is a slidable tab adapted for engaging the outer frame and the inner frame.
9. The apparatus of claim 1, wherein the expandable mesh is an expanded aluminum mesh.
10. The apparatus of claim 1, wherein the expandable mesh is laminated with glue.
- 20 11. The apparatus of claim 1, wherein the at least two front support members and the at least two back support members each form a shape selected from the group consisting of an "X" shape, a "diamond" shape, die cut design, rectangular shape, square shape, a shape of a circle with radial arms, and combinations thereof.

12. The apparatus of claim 11, wherein the die cut design is a logo for a company
13. The apparatus of claim 1, wherein the outer frame further comprises a first horizontal support and a first vertical support and the inner frame further comprises a second horizontal support and a second vertical support.
- 5 14. The apparatus of claim 1, wherein the outer frame further comprises a first circle support member engaging at least two opposing edges on the first frame and the inner frame with a first arm and a second arm further comprises a second circle support member engaging at least two opposing edges on the second frame.
15. The apparatus of claim 1, wherein the bonded wire mesh is laminated to the filter media.
- 10 16. The apparatus of claim 1, wherein the wire mesh is a welded wire.
17. The apparatus of claim 1, further comprising a measuring tape disposed on the inner frame.
18. The apparatus of claim 1, further comprising an air freshener disposed in the outer frame.
19. An apparatus for antimicrobial air filtration comprising:
- 15 a. a pleated antimicrobial filter media comprising a pleated first edge and a pleated second edge, wherein the pleated antimicrobial filter media is treated with a chemically reactive antimicrobial surface;
- b. an expandable mesh portioned on one side of the pleated antimicrobial filter media, wherein the expandable mesh is bonded to the pleated antimicrobial filter media;
- 20 c. an outer frame comprising an outer front panel, an outer back panel, an outer top side, an outer bottom side, an outer first side, and an outer second side, wherein the outer front panel and outer back panel are connected at the outer top side the outer bottom side, and the outer side;

- d. an inner frame comprising an inner front panel, an inner back panel, an inner top side, an inner bottom side, an inner first side, and an inner second side, wherein the inner front panel and inner back panel are connected at the inner top side the inner bottom side, and the inner side;
 - 5 e. at least two outer front supports members in the outer front panel creating an outer front panel opening;
 - f. at least two outer back supports members in the outer back panel creating an outer back panel opening;
 - 10 g. at least two inner front supports members in the inner front panel creating an inner front panel opening;
 - h. at least two inner back supports members in the inner back panel creating an inner back panel opening;
 - i. wherein the inner frame slides into the outer frame between the outer front panel and outer back panel; and
 - 15 j. wherein the pleated antimicrobial filter media is disposed inside the outer frame and the inner frame and the pleated first edge is attached the outer first side and the pleated second edge is attached to the inner first side.
20. An apparatus for carbon treated air filtration comprising:
- 20 a. a pleated carbon treated filter media comprising a pleated first edge and a pleated second edge, wherein the pleated carbon treated filter media is treated with activated carbon;
 - b. an expandable mesh portioned on one side of the pleated carbon treated filter media, wherein the expandable mesh is bonded to the pleated carbon treated filter media;

- c. an outer frame comprising an outer front panel, an outer back panel, an outer top side, an outer bottom side, an outer first side, and an outer second side, wherein the outer front panel and outer back panel are connected at the outer top side the outer bottom side, and the outer side;
- 5 d. an inner frame comprising an inner front panel, an inner back panel, an inner top side, an inner bottom side, an inner first side, and an inner second side, wherein the inner front panel and inner back panel are connected at the inner top side the inner bottom side, and the inner side;
- e. at least two outer front supports members in the outer front panel creating an outer
10 front panel opening;
- f. at least two outer back supports members in the outer back panel creating an outer back panel opening;
- g. at least two inner front supports members in the inner front panel creating an inner front panel opening;
- 15 h. at least two inner back supports members in the inner back panel creating an inner back panel opening;
- i. wherein the inner frame slides into the outer frame between the outer front panel and outer back panel; and
- 20 j. wherein the pleated carbon treated filter media is disposed inside the outer frame and the inner frame and the pleated first edge is attached the outer first side and the pleated second edge is attached to the inner first side.

21. An air conditioning system comprising:

- a. air intake;
- b. intake ducts comprising a first end and a second end, connected to the air intake for flowing air on a first end;
- 5 c. a blower connected to the intake duct at the second end;
- d. a motor to drive the blower for blowing air from the intake duct second end to a coil;
- e. a heating element in communication with the coil for receiving air which was passed over the coil;
- 10 f. a condensing unit connected to the coil for controlling coil temperature;
- g. outflow ducts for flowing air from the heating element to an air return;
- h. an air return; and
- i. a filter disposed in the air return for conditioning the air, wherein the filter comprises
 - 15 i. a pleated filter media comprising a pleated first edge and a pleated second edge;
 - ii. an expandable mesh portioned on one side of the pleated filter media, wherein the expandable mesh is laminated to the pleated filter media;
 - 20 iii. an outer frame comprising an outer front panel, an outer back panel, an outer top side, an outer bottom side, an outer first side, and an outer second side, wherein the outer front panel and outer back panel are connected at the outer top side, the outer bottom side, and the outer side;

- iv. an inner frame comprising an inner front panel, an inner back panel, an inner top side, an inner bottom side, an inner first side, and an inner second side, wherein the inner front panel and inner back panel are connected at the inner top side, the inner bottom side, and the inner side;
- 5 v. at least two outer front supports members in the outer front panel creating an outer front panel opening;
- vi. at least two outer back supports members in the outer back panel creating an outer back panel opening;
- vii. at least two inner front supports members in the inner front panel creating an
10 inner front panel opening;
- viii. at least two inner back supports members in the inner back panel creating an inner back panel opening;
- ix. wherein the inner frame slides into the outer frame between the outer front panel and outer back panel; and
- 15 x. wherein the pleated filter media is disposed inside the outer frame and the inner frame and the pleated first edge is attached the outer first side and the pleated second edge is attached to the inner first side.

22. A heating system comprising:

- a. air intake;
- 20 b. intake ducts comprising a first end and a second end, connected to the air intake for flowing air on a first end;
- c. a blower connected to the intake duct at the second end;
- d. a motor to drive the blower for blowing air from the intake duct second end to a

coil;

e. a heating element in communication with the coil for receiving air which was passed over the coil;

f. outflow ducts for flowing air from the heating element to an air return;

5 g. an air return; and

h. a filter disposed in the air return for conditioning the air, wherein the filter comprises

i. a pleated filter media comprising a pleated first edge and a pleated second edge;

10 ii. an expandable mesh portioned on one side of the pleated filter media, wherein the expandable mesh is laminated to the pleated filter media;

15 iii. an outer frame comprising an outer front panel, an outer back panel, an outer top side, an outer bottom side, an outer first side, and an outer second side, wherein the outer front panel and outer back panel are connected at the outer top side, the outer bottom side, and the outer side;

iv. an inner frame comprising an inner front panel, an inner back panel, an inner top side, an inner bottom side, an inner first side, and an inner second side, wherein the inner front panel and inner back panel are connected at the inner top side, the inner bottom side, and the inner side;

20 v. at least two outer front supports members in the outer front panel creating an outer front panel opening;

vi. at least two outer back supports members in the outer back panel creating an outer back panel opening;

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- vii. at least two inner front supports members in the inner front panel creating an inner front panel opening;
 - viii. at least two inner back supports members in the inner back panel creating an inner back panel opening;
 - ix. wherein the inner frame slides into the outer frame between the outer front panel and outer back panel; and
 - x. wherein the pleated filter media is disposed inside the outer frame and the inner frame and the pleated first edge is attached the outer first side and the pleated second edge is attached to the inner first side.